August, 1956 Volume 33, No. 8

COAL MINING

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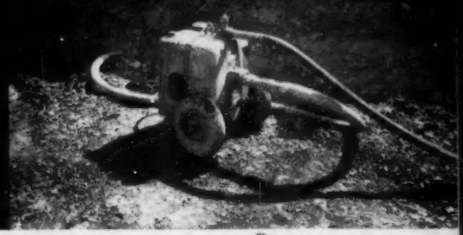

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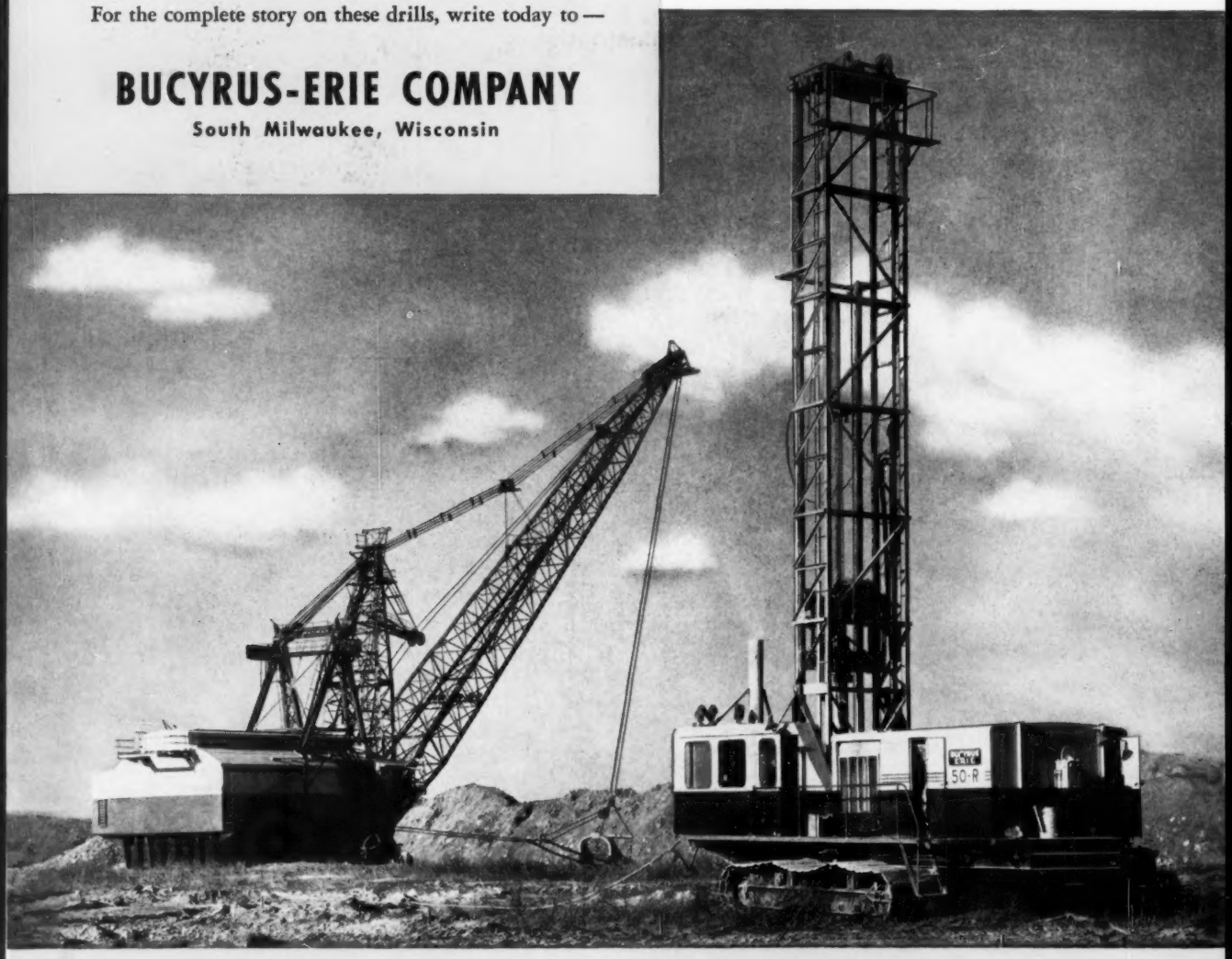

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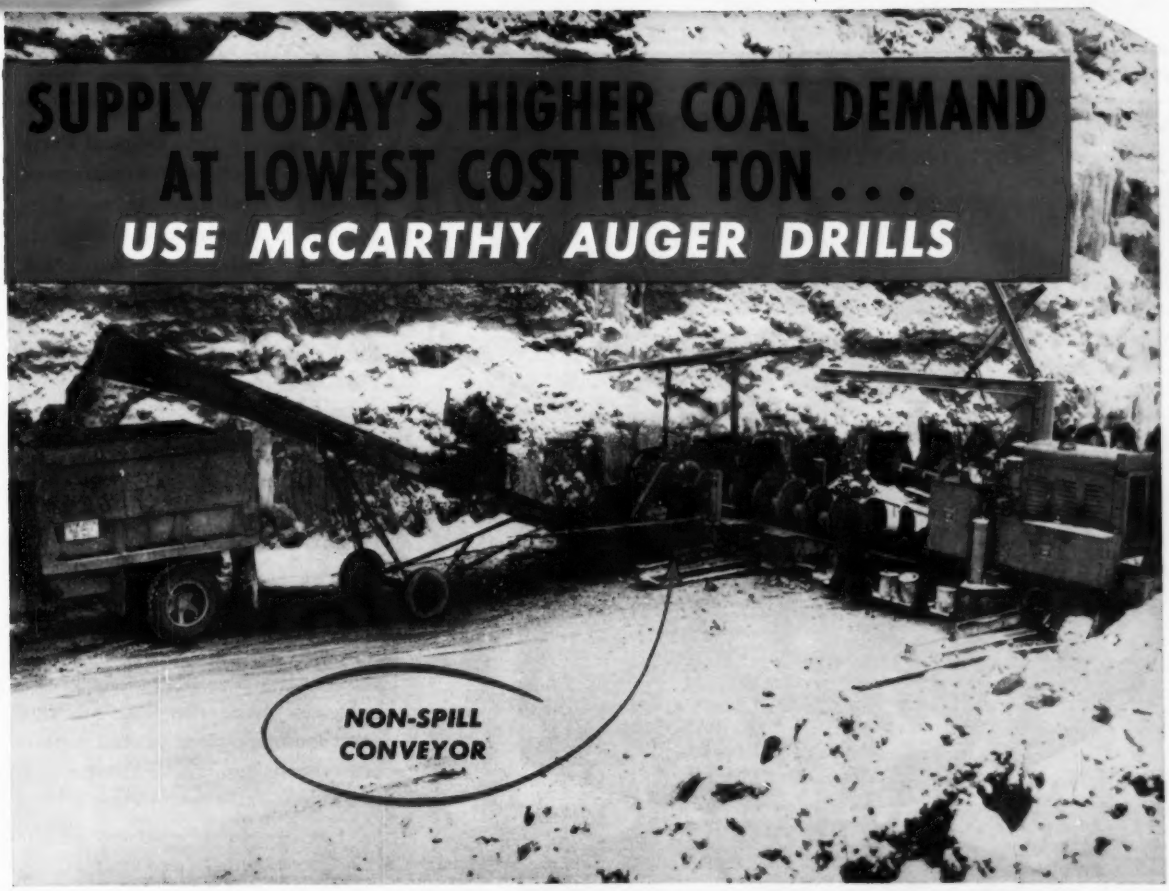

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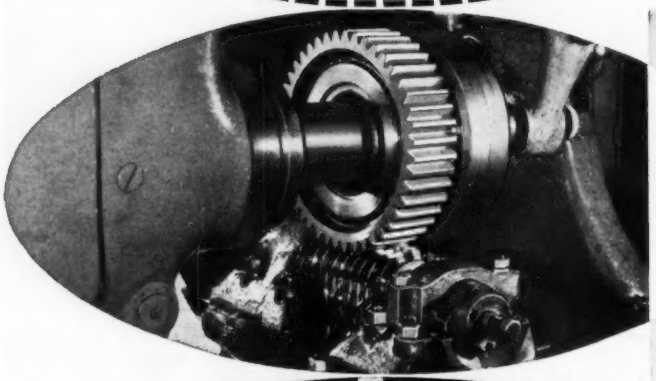

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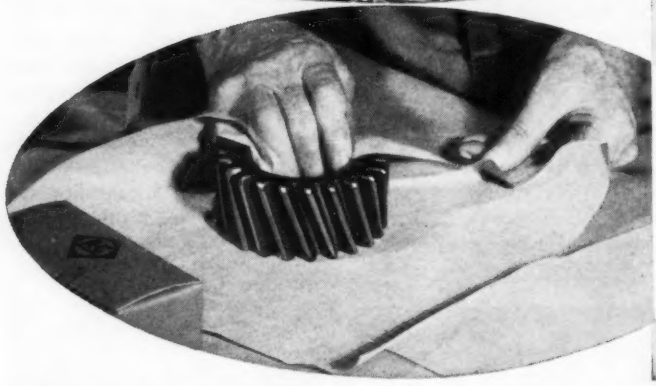

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A country-wide network of dealers stock ample supplies of True Original Parts. Whether you're working in one area or across the country, you can depend on reliable parts service close to your job from your Allis-Chalmers Construction Machinery dealer.

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COAL MINING

Volume XXXIII - August, 1956 - No. 8

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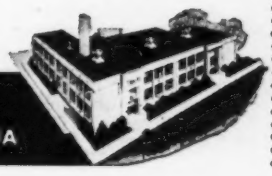

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Do You Know?

A "made-to-order" super-alloy that represents a major step forward in metallurgy was shown here today by its developers, scientists of the Westinghouse Research Laboratories, Pittsburgh, Pa.

The alloy, called Nivco, was hailed by the scientists as the forerunner of a new class of metals that can be "tailor-made" to do a specific job.

As important as the alloy is itself, the research technique used to develop the alloy is perhaps more important, the Westinghouse researchers hinted. The process permits the "predesign" of a needed set of properties into an alloy before it is ever prepared, thereby eliminating the time and money-consuming "cut-and-try" metallurgical methods now being used, Dr. Clarence Zener, acting director of Westinghouse research, said.

The new material, which is five times stronger than 12% chrome steel, resists breakdown when subjected to temperatures as high as 1,200 degrees Fahrenheit and mechanical vibration.

Although the exact ingredients of the new alloy were not disclosed, Dr. A. W. Cochardt, advisory metallurgist at the research center, said it contained principally cobalt and nickel and smaller amounts of five additional elements.

An immediate application for the alloy will be for high-temperature steam turbine blades.

The alloy resulted from mixing it first on paper by putting into the theoretical recipe all the characteristics the Westinghouse scientists wanted. To kill the effects of mechanical vibration, for example, the scientists controlled the magnetic arrangement of the atoms, before the alloy was actually prepared.

"Now, after several years of research," Dr. Cochardt said, "we have discovered how to design needed mechanical behavior into certain alloys by control of their magnetic structure. This enables us to predict the behavior we will get by combining certain metals in different proportions, and we can do this without preparing and testing hundreds of thousands of potential combinations of two or more alloying metals.

The experimental search for a better method for protecting metal surfaces from corrosion has led to the discovery of an effective rust-proofer.

The rustproofing compound, invented by Frank W. Pfohl of Westmont, Ill., and Vance P. Gregory of Elsmere, Del., received one of the 874 patents issued by the Government here this week.

In one test with the corrosion inhibitor, a steel coupon was coated with it and then subjected to a water drop test. After the drops evaporated, there was no rusting. A similar steel coupon, not treated, rusted in 15 to 30 minutes.

Chemically, the rust-inhibiting compounds are designed generically as N-aliphatic or alicyclic substituted polymethylene diamines. The inventors point out that they work best when a non-volatile, non-solvent carrier, like white mineral oil is used. They also state that the carrier and the compound work together in preventing rust.

The inventors were awarded patent No. 2,736,658. They assigned the patent to Armour and Company of Chicago, Ill.

Here and There in the Coal Industry

Alabama Mine Wins National Safety Competition. The Labuco mine of the Alabama By-Products Corp. at Flat Creek, Ala., working 168,151 man-hours without a disabling injury, took top honors for the second straight year for bituminous mines in the National Safety Competition sponsored by Explosives Engineer Magazine and conducted by the U. S. Bureau of Mines. For its achievement the mine will be awarded a large bronze "Sentinels of Safety" trophy donated by the magazine.

The four runners-up in the bituminous group, each with an outstanding record, were Rock Springs No. 8 mine, Rock Springs, Wyo., operated by Union Pacific Coal Co., working 74,894 man-hours without a disabling injury; Patton Clay Mine No. 1, Patton, Pa., operated by Patton Clay Manufacturing Co., working 38,966 man-hours with one disabling injury that caused four days of disability and an injury-severity rate of 0.103; Sayreton Mine, Sayreton, Ala., operated by Republic Steel Corp., working 444,739 man-hours with one disabling injury that caused 62 days of disability with an injury-severity rate of 0.139; and the Karen Mine, Fredricktown, Pa., operated by United States Steel Corp., working 477,656 man-hours with one disabling injury that caused 88 days of disability and an injury-severity rate of 0.184. In the contest, bituminous coal participants achieved a record low injury frequency rate, 16.2 per million man-hours—an all-time low.

The Salem Tool Company, Salem, Ohio, has appointed Gatti Engineering Co., Forty Fort, Penna., sales representative for its line of McCarthy coal recovery auger drills. G. A. Gatti heads the firm that will cover the anthracite region of eastern Pennsylvania. Gatti sales offices are at 2001 Wyoming Avenue.

William H. Ritter has been elected president of Reitz Coal Co., Windber, Pa., for his 18th consecutive term. Other officers re-elected are P. D. Brown, Philadelphia, vice-president; Howard Sutton, Philadelphia, secretary; and Bryson Dunmire, Windber, treasurer. Mr. Ritter reported conditions in the industry better than in 1955, and said he expects a general upswing in coal production during the remainder of the year.

E. H. Robinson has been elected secretary-treasurer of the Virginia Coal Operators Association, succeeding the late George H. Esser.

The Gauley Mountain Coal Co. has been reorganized as of July 10 to continue operation of the Company's mining properties in Fayette County, W. Va. The new co-owners of the property are James D. Ireland, president of Peters Creek Coal Co., at Summersville, W. Va., and Robert D. Cowen, president of Monongahela & Ohio Coal Co., Cleveland. They are president and vice-president, respectively, of the new corporation, which will operate independently of the two other concerns. Harold F. Stanton will continue as manager of the properties at the main office in Ansted, W. Va.

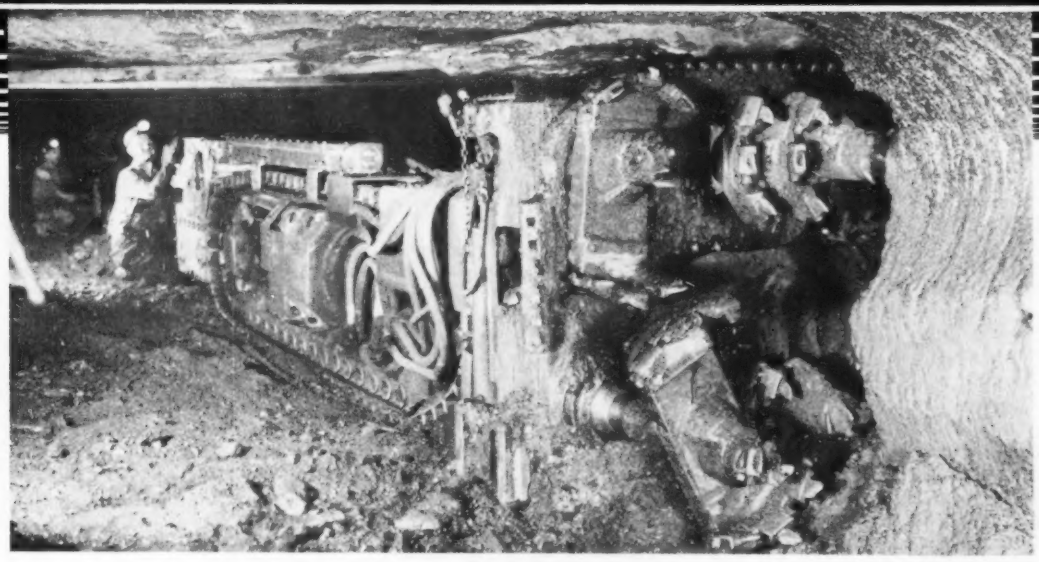
The Daniels Company, of Indiana, Pennsylvania, Coal Preparation Specialists, announces the following personnel news:

Mr. John W. Hough has been elected Vice-President in charge of Engineering.

Mr. J. B. Richardson has been elected Vice-President in charge of Operations.

Mr. Gordon H. Dunn has been appointed General Purchasing Agent.

MAN AND MACHINES



There is a hard reality behind some of the present-day lurid science fiction: Men have now made machines that are challenging the inborn anatomical and mental limitations of their masters.

Man has studied and speculated about his nature for many centuries. Probably ever since he first saw his reflection in a prehistoric pool he has wondered about himself. Throughout the ages, theologians, lawyers, physicians, philosophers, poets, myth-makers, and more recently anthropologists, psychiatrists, geneticists, physiologists, sociologists, and many other specialists, as well as psychologists, have pondered aspects of the great question "What is man?" None has yet produced the final answer. Not even the most ardent present-day advocates of the usefulness of psychology would dream of maintaining that this one area of study alone can ever give a full reply to this obdurate riddle of the Sphinx. Nevertheless, modern experimental psychology has developed useful techniques and is providing factual, fundamental information about human nature. The present-day relationship between human beings and machines and society is being made more understandable by this science in more than a few respects. When the student of mental reactions is asked, "What are the capacities of human individuals?" his answer today is far from complete, but it is possible to approach an answer in modest, factual terms.

The wise phychologist does not attempt to predict the nature of the end-products of human artistic creation or try to determine the boundaries of man's highest intellectual potentialities or spiritual and esthetic insights. Rather, psychologists try to describe, wherever possible in quantitative terms, basic mental processes, which are often shown to be related to the anatomical and physiological living machinery of a unique primate called Homo sapiens.

In general, the information made available as a result of experimental psychology is essential to concrete thinking concerning the present-day changing relationship between man and his world. The engineer who builds a new diesel locomotive is limited by the properties of the materials he uses. The weight, strength, heat resistance, elasticity, and other characteristics of the metals he employs do not predetermine the shape into which the material is to be fabricated. On the other hand, parts of such engines cannot be made of metals that have other than very specific characteristics. The same relationship holds for one who would consider how modern machines and present-day society are related to the inborn traits of every human being. "Which of you by taking thought can add one cubit unto his stature?" also applies to other characteristics than height. A jet pilot cannot by thought, education, or wishing speed up beyond a certain fixed point the time his nerves must take in responding to external stimuli. Anyone concerned with designing new airplanes, or with training pilots to fly such planes in formations, or with developing a better political or economic system must not forget that, physiologically and psychologically, men have a large number of inborn capacities and many specific limitations. — Leonard Carmichael, Secretary, Smithsonian Institution.

This editorial is based on the Arthur Dehon Little Memorial lecture, "Psychology, the machine, and society," given at Massachusetts Institute of Technology, 17 Nov. 1953. Published in May 11, 1956 issue of SCIENCE.

SECURING TOP RESULTS FROM WORK ASSIGNMENTS

by Ernest W. Fair

"Get rough . . . let 'em know it's their jobs if they fail to come through . . . that's the only way to handle employees when you give them a job to do!"

"Apply some sound planning and maneuvering in handing out your assignments and you'll not only keep the staff happy but get the job done every time!"

The foregoing are two solutions to the problem of seeing that a coal firm executive's work assignments are carried out by the men under his supervision. They represent opposite extremes, of course. The first was in top favor many years ago; the second has supplanted it almost entirely today.

The gruff and bombastic method required little planning . Sometimes it got the job done and sometimes it did not: It usually caused hard-feelings and resentment and was a source of constant grief for the executive in the follow-through that was necessary.

Not so with the use of today's methods of securing top results from work assignments. In paragraphs to follow are summarized the important ingredients which go into this formula. The application of all which apply to each particular situation assures the assignment being carried out with least strain on the coal firm executive and greatest assurance of desired results.

Presenting a clear picture of all the facts is of first importance. Any assignment which gives the employee only half a picture of what is to be done or how it is to be done leaves a wide margin for error and possible failure. Making certain that we have presented all pertinent data and that it is clearly understood by the employee is positive assurance the margin for error can be reduced to almost a vanishing point.

Such a presentation need not be into fine detail; any employee worth having on our payroll should have the ability to think for himself or herself to at least a small degree. But every assignment

Continued on next page

should be first checked carefully to make sure that ALL of the facts are contained within the assignment before it is relayed to the person involved.

Make sure that the importance of the assignment is specified. A job handed out in an off-hand manner will not impress the employee as being of considerable importance and therefore deserving extra effort and care. Where such importance is present it should always be made clear to the employee to whom we are giving any assignment.

"Don't lose control yourself . . . keep the area limited," is advice given by many experienced executives. They point out that retention of some element of control on each assignment is the coal executive's guarantee that the employee will put forth maximum effort in its accomplishment. As long as an employee has definite responsibility toward someone else in performing any task he or she will always exercise greater care and caution in carrying out the assignment.

This also brings up our next point . . . check up and reassure from time to time. Most such work assignments involve projects of more than a few hours. In many instances they will involve several days. On the latter it is most important that the executive have a regular routine of checking with the employee on what has been accomplished. On every occasion he should pass along assurance to that employee on how he or she is handling the assignment. A check-up for the later purpose alone will fulfill the design. It is an added insurance that the orders will be carried out accurately and as speedily as possible.

Another factor of importance is to always tell the employee with whom he is to deal in carrying out the assignment AND to inform such individuals of the role expected of them when they are approached. Such procedure makes any assignment much easier for the employee to handle. The authority of the executive can smooth the way by such assurance. It can cut the completion time of most assignments by as much as half as compared with the time required should such contacts not be given with each requirement assigning them.

"Don't pass along the hot potatoes to take yourself off a spot," is another piece of advice handed to us by several experienced executives. They point out that this is always the line of least resistance for the individual confronted with such an unappealing or difficult problem, i.e., pass it along to someone else.

Such procedure never endears an executive to the men and women working under him. They recognize these jobs which the executive should handle himself. When individual has such a "hot potato" suddenly thrust upon him that man is anything but happy. Under those circumstances he will not only find it difficult to carry out the assignment but will in most instances do no more than is required for him to "get by".

Along much the same line it is also inadvisable to pass along assignments which are actually too technical for members of one's staff to handle. We all have a tendency to assume that the technical knowledge we possess should also be a part of the equipment of our staff men and women. This is seldom the case. Otherwise one of them might well be sitting in our executive chair instead of you or I!

Every such work assignment should be carefully examined for such technical elements and a thorough consideration of the ability of the person to whom the assignment is to be given analyzed. A number of studies have shown that the most prevalent reason for failure to carry out executive assignments by staff personnel is based on the inability of the individual to handle a problem.

Such procedure, when repeated frequently, lowers the morale of an otherwise good member of our staff. A very inefficient man or woman can be reduced to virtual incompetence by a continued barrage of such assignments. Careful checking of the technical requirements and the ability of the person to carry out the assignment should be a must on every major order issued by any executive . . . is often advisable on even the minor assignments.

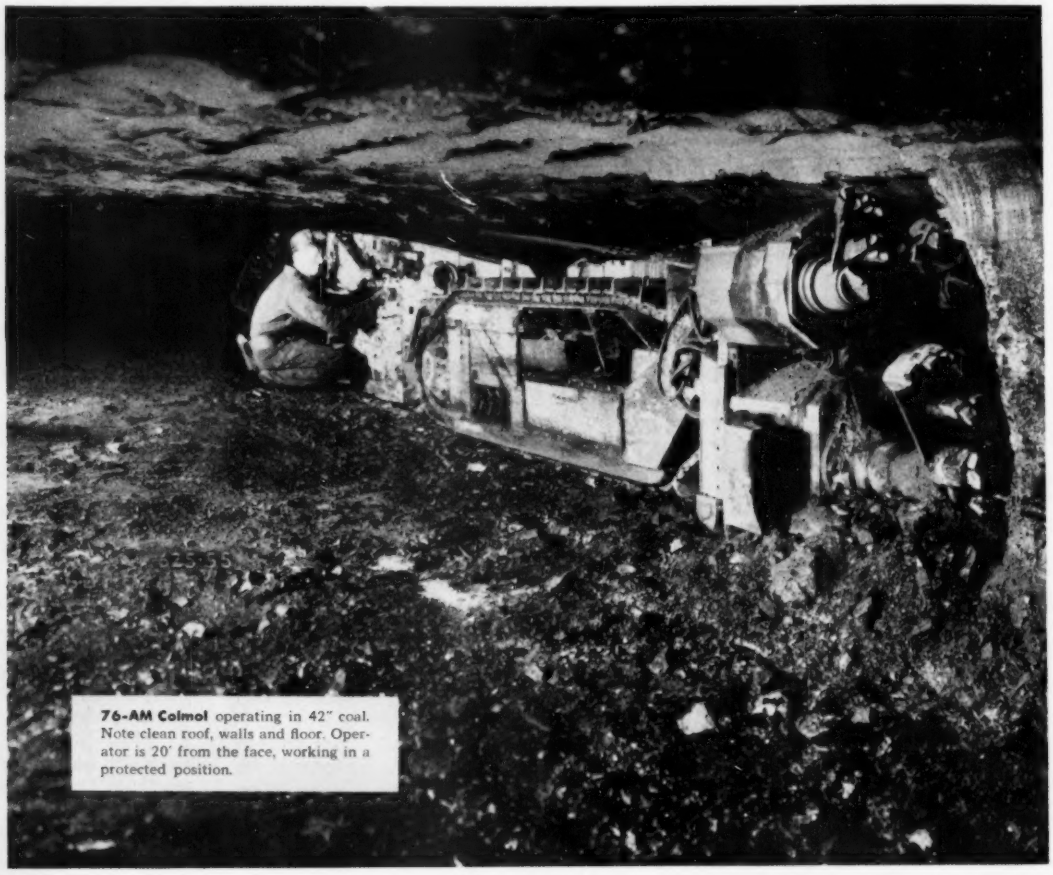
"Don't delegate a job you can handle more efficiently yourself," is another good piece of advice from several executives. They point out that the primary responsibility of any executive is to "get the job done" in the speediest, quickest and most economical manner. When an assignment comes up that can be so handled by the coal executive himself much more ably than by any other member of his staff that executive is violating this principle by delegating it to someone else.

They also add that such assignments usually result in waste all around . . . first in the executive's own time re-doing the assignment itself or in completing that part of it the other fellow was unable to accomplish, and secondly, in the time of the employee to whom the assignment was given in the first place. The latter could have more profitably spent his time on some task he was thoroughly able to handle.

Along these lines we have another suggestion . . . "Don't expect the job to be done as well as you could do it" . . . something we often forget. The wise executive always remembers that he holds down the business post in his possession because he has reached top efficiency. The drives which hold him there are seldom existant in the men and women working under him or they too would be executives.

Impatience with the speed, ability or ingenuity used by staff members to do the job can lead to even further losses in accomplishment by these people. Such impatience is usually engendered by one's expecting executive ability in every employee.

As a final suggestion we pass along a pointer mentioned by almost every expert with whom we talked . . . "Don't have too many going at once" . . . which is one of the big failings of many executives. Too many job assignments means our supervision and control over them is spread so thin we can actually lose all touch with a number of these assignments.



76-AM Colmol operating in 42" coal. Note clean roof, walls and floor. Operator is 20' from the face, working in a protected position.

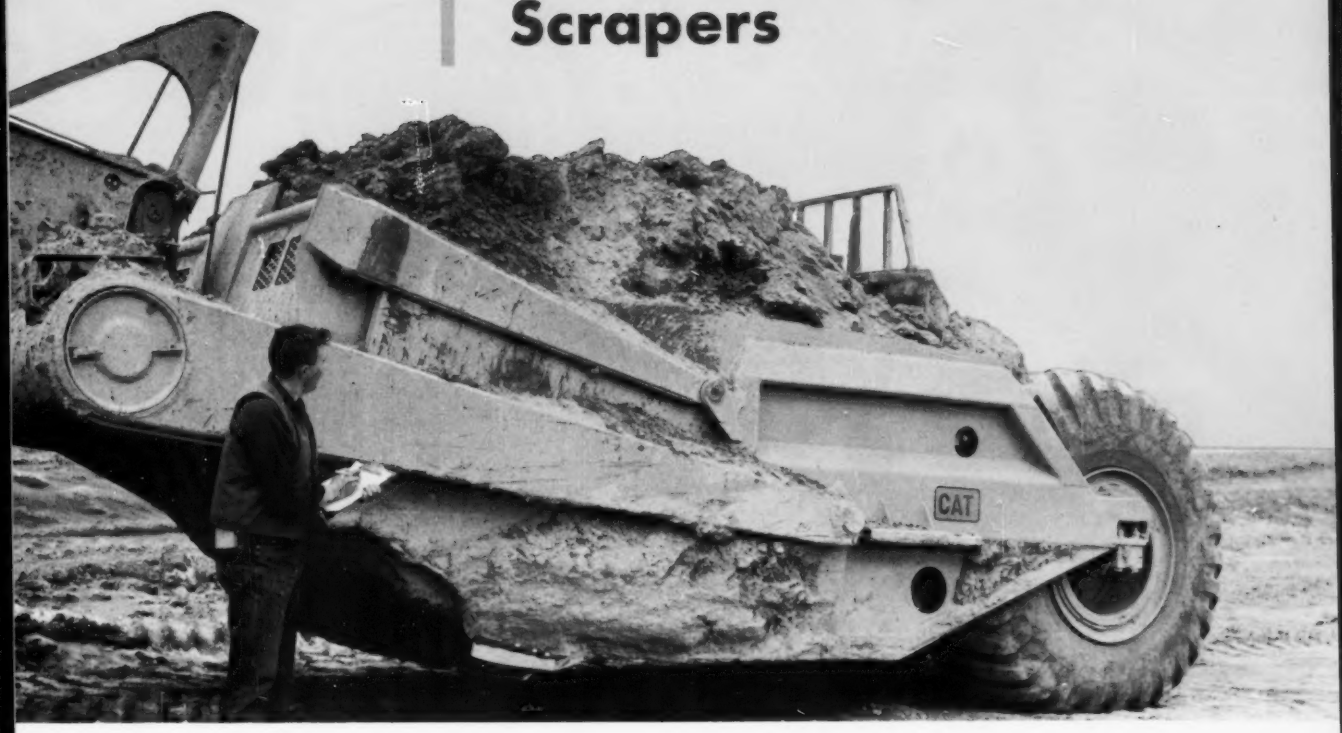
Capital and Tools Give American Worker Highest Standard of Living

A hundred years ago it took the average worker 70 hours per week to produce as much as the average American worker of today can produce in a 40-hour week. A hundred years ago 13 per cent of all work was done by muscle power of the human; over 50 per cent was done by horses, mules and oxen. That kind of animate energy cannot compete today with man behind a machine using inanimate power.

The average American today has about 10 times as much goods and services at his disposal as the average man in the rest of the world. Native intelligence of the American is no higher than native intelligence of people in countries from which his forefathers migrated. The reason for such great advancement in American production of goods and services is the accumulation of capital and tools. The present high living standard of the American is based on the availability and use of tools.

YOUR CATERPILLAR DEALER PRESENTS

Test Proof of BONUS PAY YARDS with CAT LOWBOWL Scrapers



In recent tests on one of the country's major turnpike construction projects, a Caterpillar DW21 (Series C)—No. 470 LOWBOWL Scraper unit set performance records with a new loading pace that competition couldn't match. The DW21 and No. 470 Scraper outloaded all major competitors including two and four-wheel tractor-scrapers of equal rated capacity—load after load after load.

Contractors on hand were impressed with the fast, live loading action of the LOWBOWL scraper design —an exclusive Caterpillar development. They saw the longer, wider bowl load more uniformly, fill all corners and get maximum yardage on every trip.

All units were loaded under similar conditions. Soil density tests were performed in the loading area to provide an accurate measure of scraper load in pay yards. Weight tests were made by Caterpillar field engineers, using a highly accurate, portable platform scale (right). Load after load passed over this scale and accurately maintained weight records proved larger payload capacity with the Cat wheel Tractor-LOWBOWL unit.

The prime mover matched to the LOWBOWL scraper was the DW21 Tractor powered by a 300 HP (maximum output) Turbocharged engine. The demonstrations proved the unit to have plenty of go . . . enough to beat or equal other units in cycle time while carrying more pay yards. Other features contributing to the success of the unit were larger footprint 29.5-29 tires, unexcelled visibility, synchro-safe brakes and the fast, responsive No. 27 Cable Control.

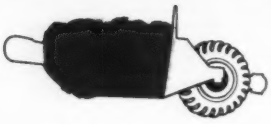
COMPLETE TEST RESULTS INSIDE

Tests Prove:

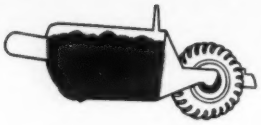
CAT LOWBOWL SCRAPER

AVERAGES MORE PAY DIRT PER LOAD!

NO. 470 LOWBOWL VS. SCRAPER "A"



LOWBOWL
(18 cu. yd. struck capacity)
AVERAGE LOAD
18.1
BANK CU. YD.



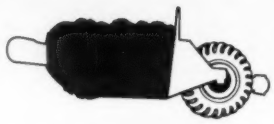
SCRAPER "A"
(18 cu. yd. struck capacity)
AVERAGE LOAD
14.8
BANK CU. YD.

Material: Damp silty clay
Density: 3,300 pounds/cubic yard (actual test)
Average Net Load Weight, pounds: No. 470 59,840
Scraper "A" 48,675

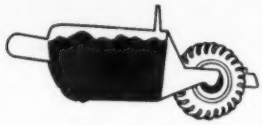
Remarks: On one load, Scraper "A" operator was asked to obtain maximum heap. It took 2.40 minutes of push loading to pick up a load which weighed 58,875 net pounds—less than the average load carried by the Cat No. 470!

LOWBOWL BONUS: 18%

NO. 470 LOWBOWL VS. SCRAPER "B"



LOWBOWL
(18 cu. yd. struck capacity)
AVERAGE LOAD
18.1
BANK CU. YD.



SCRAPER "B"
(Sideboarded—18 cu. yd. struck capacity)
AVERAGE LOAD
14.3
BANK CU. YD.

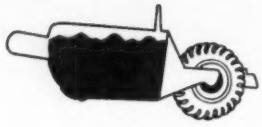
Material: Sandy clay
Density: 3,100 pounds/cubic yard (actual test)
Average Net Load Weight, pounds: No. 470 56,225
Scraper "B" 44,400

Remarks: No. 470 Scraper averaged nearly 12,000 more pounds per load than Scraper "B", yet equalled it in average loading time. Total cycle time for the DW21, however, was better than Scraper "B" because of shorter turning radius and because the DW21 provided a better match to rimpull requirements.

LOWBOWL BONUS: 21%

NO. 470 LOWBOWL VS. SCRAPER "C"

LOWBOWL
(18 cu. yd. struck capacity)
AVERAGE LOAD
18.1
BANK CU. YD.



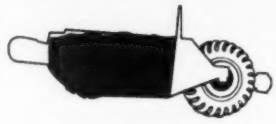
SCRAPER "C"
(18 cu. yd. struck capacity)
AVERAGE LOAD
14.3
BANK CU. YD.

Material: Damp silty clay
Density: 3,300 pounds/cubic yard (actual test)
Average Net Load Weight, pounds: No. 470 59,840
Scraper "C" 47,290

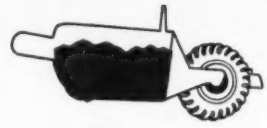
Remarks: Results on the job, not rated capacities, are the only true measure of a machine's ability to produce. Scraper "C" and Scraper "A" are both rated as 18 cu. yd. scrapers, yet the No. 470 Scraper is the only one that delivers what it promises.

LOWBOWL BONUS: 21%

NO. 470 LOWBOWL VS. SCRAPER "D"



LOWBOWL
(18 cu. yd. struck capacity)
AVERAGE LOAD
15.6
BANK CU. YD.



SCRAPER "D"
(Sideboarded—18 cu. yd. struck capacity)
AVERAGE LOAD
13.3
BANK CU. YD.

Material: Heavy clay; swell about 40%
Density: 3,440 pounds/cubic yard (actual test)
Average Net Load Weight, pounds: No. 470 53,550
Scraper "D" 45,630

Remarks: Reason for the smaller average loads in this test is due to the greater density of the heavy clay. Scraper "D" scored next best to the No. 470. And no wonder, it was the "old" DW21–No. 21—a unit famous for high production the world over. Now, the new DW21–No. 470 is even better and way out ahead of competition.

LOWBOWL BONUS: 15%

How CAT LOWBOWL design pays off in bigger, faster Pay Loads for YOU!

Both the Cat No. 470 Scraper (in the test), and the No. 456 Scraper matched to the Cat DW20 Wheel Tractor feature LOWBOWL design for greater capacity; faster, easier loading. The bowl has been widened and lengthened, yet bowl depth has been decreased. Incoming material spreads out over a wider area during the loading operation; corner voids are eliminated. There's less overhead weight to retard the boiling action of the load—tractor and pusher horsepower are utilized more efficiently. Incoming material is loaded with less resistance throughout the entire loading cycle. Result: bigger loads in faster loading time with LOWBOWL design! To you these *extra* pay yards mean an *extra* margin of profit. You can hardly afford to miss the profit-making opportunity of the Cat LOWBOWL Scrapers!

BRIEF SPECIFICATIONS

No. 470 and No. 456

Method of operation	Cable
Capacity:	
Struck	18 cu. yd.
Heaped (based on approx. 1:1 slope)	25 cu. yd.
Bowl:	
Height of sides	4′ 10″
Bottom dimensions	10′ x 5′ 9″
Apron opening (bowl up)	5′ 11″
Maximum depth of spread	1′ 8″
Maximum depth of cut	Any practical depth
Type of ejection	Dozer-type, positive

Match LOWBOWL Big Loads with CAT Wheel Tractor Speeds!

The DW21 (Series C) and DW20 (Series E) Tractors teamed with No. 470 and No. 456 Scrapers offer the greatest money-making opportunity of any units in their class. New Turbocharger on both engines is driven by normally-wasted engine exhaust gases. As the load on the engine increases, the amount of air which is packed into the cylinders also increases, giving you more power when you need it. High speeds for fast hauls are assured also with a top speed of 20.5 MPH for the DW21 and 32.1 MPH for the DW20. And these machines are backed up by the largest and finest dealer sales and service organization of its kind in the world. So contact your Caterpillar Dealer now. He'll show you how the speed, capacity and quality of the Cat DW21 and DW20 will net you more profits on your next job.

CAT DW21 TRACTOR

CAT DW20 TRACTOR

TAKE ADVANTAGE OF **CATERPILLAR** JOB-PROVEN PERFORMANCE

Cost Records Prove CAT Motor Graders Work Longer for Less!

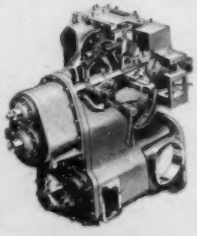
Cost records (shown below) maintained by this owner of a fleet of Cat Motor Graders prove conclusively that Cat Motor Graders work longer for less! Records were accurately maintained from 1940—the date their first Cat Motor Grader was purchased—through September, 1954.

MAKE OF MACHINE	CAT MOTOR GRADER	MAKE "A"	MAKE "B"	MAKE "C"
HOURLY OPERATING COST (WITHOUT DEPRECIATION)	$1.698	$2.309	$2.491	$2.565
AVERAGE AGE	7.2 YEARS	4 YEARS	3 YEARS	6.3 YEARS
MACHINES OPERATED	10	9	4	4

In these 14 years, note these startling conclusions:

- Operating costs of Cat Motor Graders (a total of 10 purchased) averaged only $1.70 per hour—*61 cents less than the runner-up.*
- Average age of Cat Motor Graders was 7.2 years—older than all other makes. Yet new makes A, B, and C could not match the low-cost performance of veteran Cat Motor Graders.

There are many reasons why Cat Motor Graders cost less to operate . . . many reasons why they leave you a larger margin of profit from every job. One is the exclusive Cat oil clutch (below), now standard on the No. 12. Another is that now you get tubeless tires with every size Cat Motor Grader. Tubeless tires eliminate an estimated 80% of down time caused by tires. They're easier and quicker to mount, hold air longer, run cooler and give better puncture and blowout protection. So see your Caterpillar Dealer, listed at the right, for the complete story on Cat Motor Graders. His recommendations can cut your operating costs . . . increase your profits.



Look to these Names for the Finest in Construction Equipment

YOUR **CATERPILLAR** DEALER

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Old Town Road, CLEARFIELD
East Broadway, FARRELL — PA.
361-369 Congress St., BRADFORD
1356 E. 12th St., ERIE
Buckhannon Pike, CLARKSBURG — W. VA.

OHIO MACHINERY CO.

6606 Schaaf Road, CLEVELAND
930 Kinnear Road, COLUMBUS
2807 Reynolds Road, TOLEDO — OHIO
U. S. Route 250, CADIZ
4000 Lake Park Road, YOUNGSTOWN

WALKER MACHINERY CO.

1545 Hansford Street, CHARLESTON
4010 Emerson Avenue, Route #2, PARKERSBURG — W. VA.

CM-5V

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co., U.S.A.

PB56A
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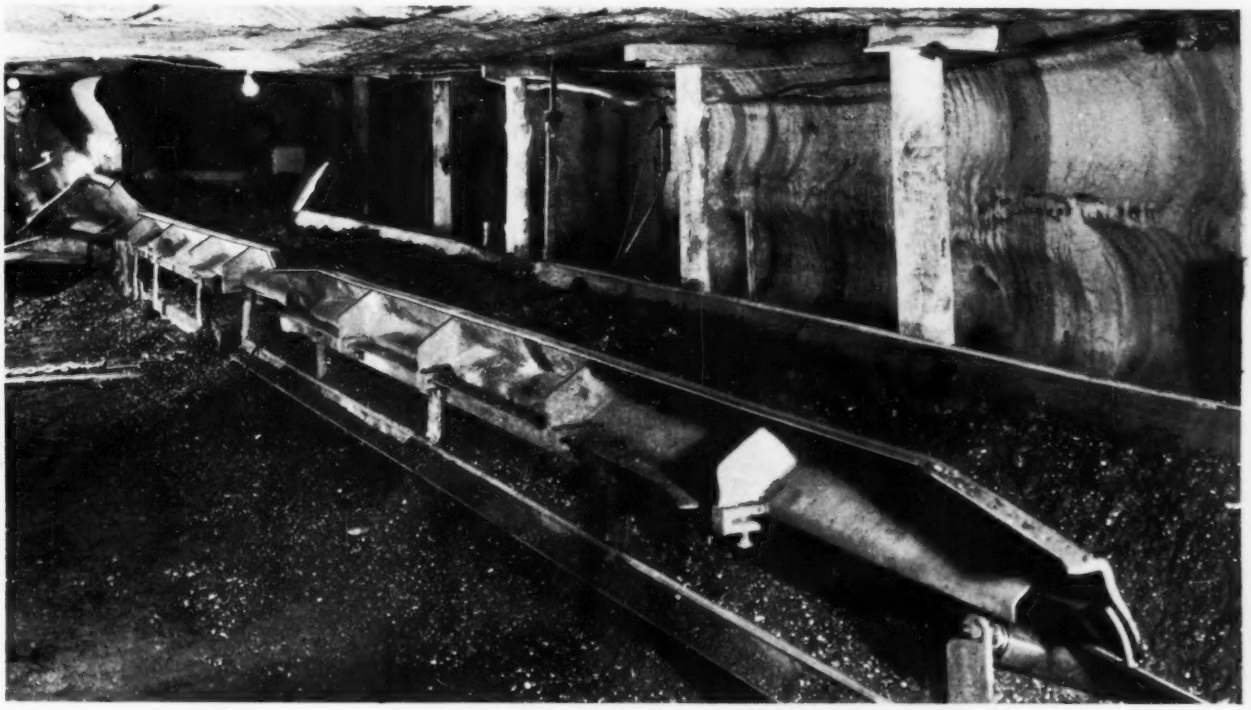
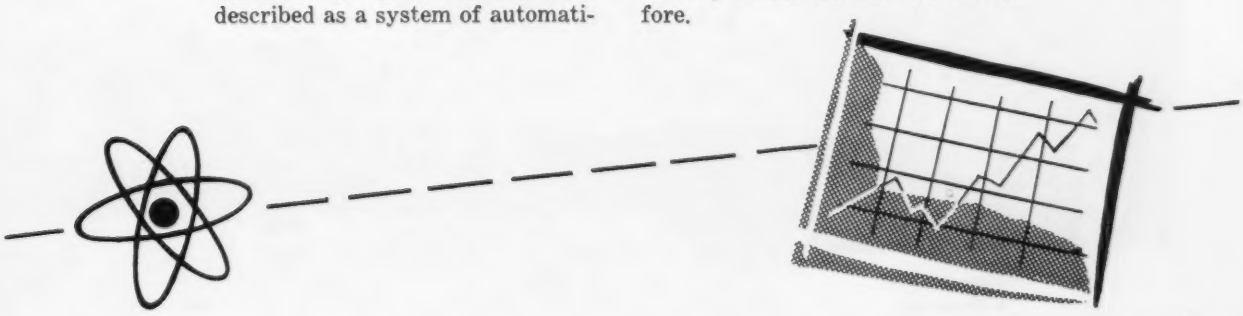
SEE YOUR **CATERPILLAR** DEALER
FOR AN ON-YOUR-JOB DEMONSTRATION



AUTOMATION Brings More and better employment

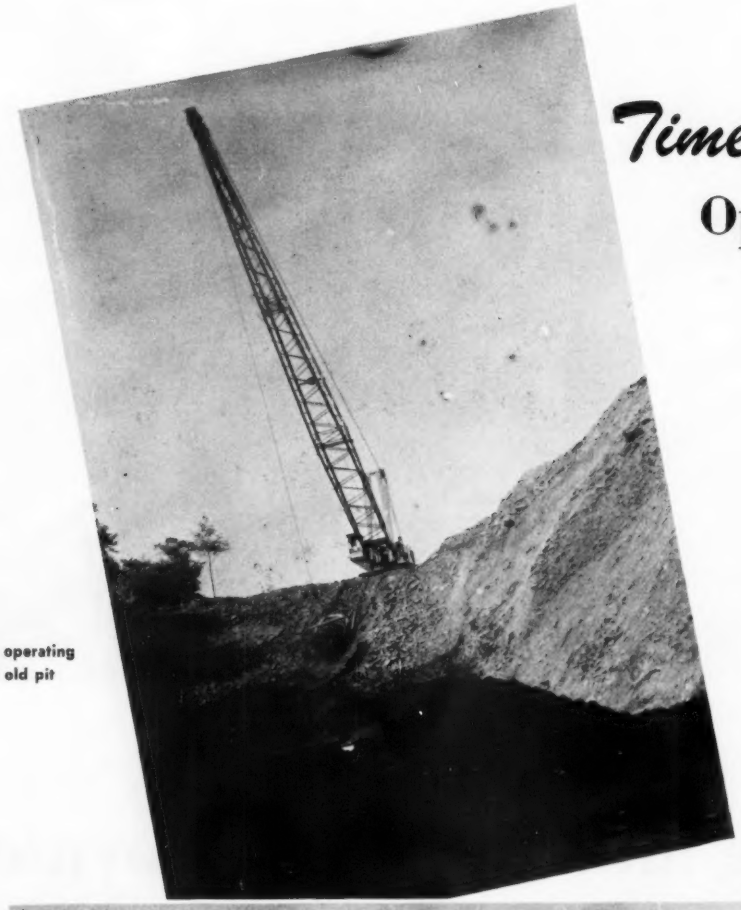
Automation is a process that has been going on over since the caveman learned that large objects could be moved easier with a lever than with the bare hand. Invention of the wedge, the wheel, the incline plane and other subsequent tools has increased the capacity of workers so that one man can now do the work of many.

Of late automation has been very much in the news and has been described as a system of automatically-pushed buttons. Amazing as some of the new electronic instruments may be, they are nothing more than typical extensions of the use man has learned to make of tools. Automation of mines, mills and factories will not bring about unemployment of workers. Automation will multiply employment as each new development opens up whole new fields of business activity which has not existed before.

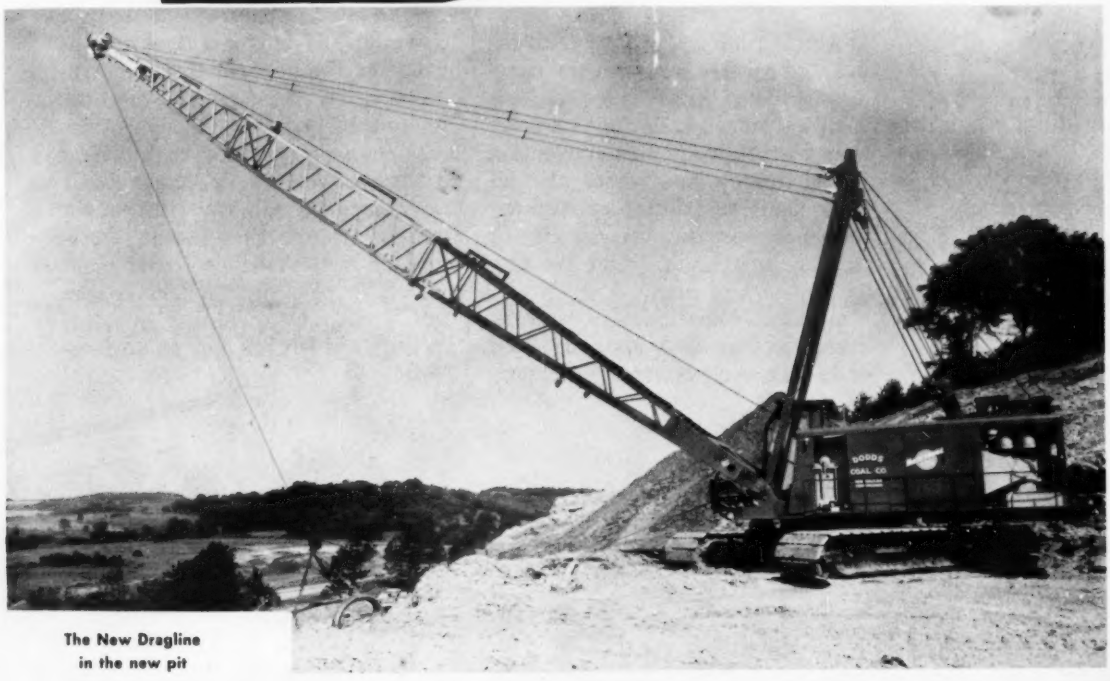


Time and Change

Opening New Coal Strip Areas



Dragline operating in the old pit



The New Dragline in the new pit

Time and change are two of the surest events on this earth. Land containing seams of coal previously considered too thin for profitable mining is now being mined because time and change and modern equipment have made it possible. Areas that never before produced anything are now being developed for the production of coal and are becoming prosperous.

One such area is the coal bearing land in Lawrence County, Pennsylvania. In that area from one to three seams of coal are present and with modern stripping machinery are being mined profitably. Time made possible the market and modern machinery is providing the profit.

Operating out of New Galilee, Penna., Dodds Coal Co., is using two Model 4500 Manitowoc draglines to recover 3 seams of coal about a mile north of New Galilee. Until recently this operator had only one dragline and a D-8 Caterpillar tractor. With the additional new dragline and new D-9 Caterpillar tractor he will more than double his production. Two pits are being operated, the older pit using the old dragline and D-8 tractor are working the Upper Kittanning seam of coal which averages 31 inches thick. The Freeport seam of coal is present on this property in the higher spots and lies about 45 feet above the Upper Kittanning seam. Up to 75 feet of overburden will be moved to recover the Upper Kittanning and the Freeport seams.

The new pit lies about a mile west of the old pit. On this land only the Upper and Middle Kittanning coals are present. Both run about 31 inches thick. The new dragline and a new Caterpillar D-9 tractor are on this property, at present recovering only the Middle Kittanning coal. The Upper Kittanning coal will be encountered as overburden height is reached. Both draglines are using 5¼-yard Esco buckets.

The market is mostly among public Utility and industrial plants in the area and in Youngstown, Ohio.

The New Caterpillar D-9 tractor pushing top soil and making bench for the dragline.

Euclid Division, General Motors Corporation, announces the release of a new 16mm color, sound film "Contractors Decision".

This 10-minute film features the S-18 Scraper—an overhung engine type 18-yard struck machine with 300 H.P., Torqmatic Drive, either 27.00 x 33 or 33.5 x 33 tires, No-Spin differential and complete hydraulic operation of the bowl.

The movie covers the three major concerns of a contractor who operates scrapers — performance, dependability, and component accessibility for ease of maintenance.

Arrangements can be made to borrow a print of "Contractors Decision" through Euclid dealers, regional offices or by writing directly to Euclid Division, Cleveland 17, Ohio.

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GET the right wire rope for each job!
MACWHYTE COMPANY
You get better service when you order the right rope from
the thousand and one wire ropes
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Mine Lighting Display

Mine Lighting — Past and Present — is displayed at a meeting of the Appalachian Chapter of the West Virginia Society of Professional Engineers at the Glass House, Beckley, W. Va. On the left are florescent type lights which are now being used in a lighting experiment test in the Armco Steel Corporation Mine at Montcoal, W. Va.; the modern cap lamp; some flame safety lamps that could be used in an explosive mixture of gas and air; carbide lamps; and the oil, sunshine, or lardoil burning cap lamp.

Paul S. Carter (center) maintenance superintendent of Armco Steel Corp. at Montcoal, was in charge of the display. Looking on are, left to right, C. R. Hoover, Alex Keleman and Carter, all of Armco Steel Corp.; Lloyd G. Fitzgerald of the U. S. Bureau of Mines, President of the Chapter; and Tom Howard, of the New River Co., Secretary of the Chapter.

Personnel changes recently announced by The Jeffrey Manufacturing Company, Columbus, Ohio, include: William K. Myers replaces R. W. Sweitzer as District Manager of the New York Office; Tom Fear, Jr. replaces Harley Lee as District Manager of the St. Louis Office. Lee will continue in an advisory capacity. William T. Davis, formerly of the Houston District Office, goes to Western Territory Sales Office in San Francisco, as Application Engineer. William A. Lewis was appointed Sales Engineer for the Houston District Office and Ralph Bolton was named Sales Engineer for the Birmingham District Office. James A. Frazier was assigned to the Industrial Sales Division at the Beckley, West Virginia, District Office.

John Chrystal, Manager of Original Equipment Sales in the Home Office, replaces C. O. McFadden as Manager of the Columbus District Office. McFadden will continue in an advisory capacity. A. T. Loew succeeds Chrystal as Manager of Original Equipment Sales. Succeeding Loew is Dick Ross who will be Office Manager of the Merchandise Sales Division.

A new device for easy, inexpensive dust collection in overhead drilling operations is described in a bulletin just published by Mine Safety Appliances Company of Pittsburgh.

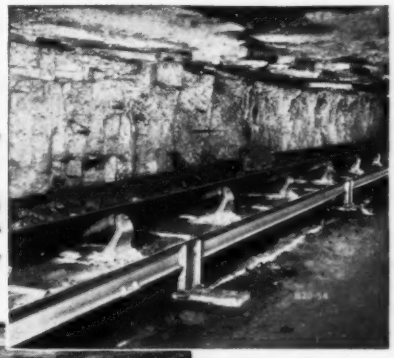
The M-S-A Drildust Bucket, designed to provide a portable method of dust collection for overhead rotary drilling operations where fluted augers are used, bears United States Bureau of Mines Approval. Basically, it consists of a rubber hood and collecting bucket with a support assembly, all of which slide over the drill.

Dust created by drilling falls into the bucket, which remains in contact with the roof. The bucket does not interfere with normal drilling operations, whether directly overhead or diagonally upward. No external power for operation is required.

The bulletin, Number 1504-3, pictures the M-S-A Drildust Bucket and fully describes its design and operation. It may be obtained from Mine Safety Appliances Company, 201 North Braddock Avenue, Pittsburgh 8, Pa.

by "buggy" and by belt

JEFFREY IS YOUR BEST BUY



Jeffrey 80-A Belt Conveyor for heavy duty main line service.

Jeffrey MT66 Shuttle Car, built in basic heights 30" to 42".

From coal face to mine tipple, coal gets a faster, more economical ride on Jeffrey shuttle cars and belt conveyors.

Jeffrey builds a complete line of powerful shuttle cars in 24" to 54" basic heights. They are designed for rugged service, high capacity and easy steering under every mine condition.

For belt conveying, Jeffrey manufactures three types of sturdy head sections and three types of strong frames to give nine basic combinations of underground conveyors. One of these is suited to your exact needs for high-tonnage handling at low cost.

Write Mining Sales Division, The Jeffrey Manufacturing Co., Columbus 16, Ohio.

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SALEM "HERCULES" AUGERS FOR ELECTRIC DRILLS

Made To Withstand High Drilling Speed, Whip And Torsional Strain Of Electric Drills

Drills holes faster — Will not snap off shank or chip points — Outlasts four or five ordinary augers.

THE SALEM TOOL COMPANY SALEM, OHIO, U.S.A.

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DRILLS

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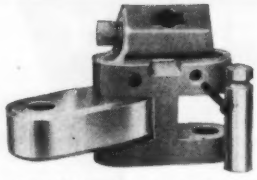
625 Page Dragline, 170', 8 yd.
200-W Bucyrus Monighan Drag, 140', 6 Yd.
621 Page Dragline, 135', 5 Yd.
7200 Marion Diesel Drag, 120', 7 Yd.
2400 Lima Dragline, 120', 6 Yd.
4500 Manitowoc Dragline, 120', 5 Yd.
618 Page Dragline, 110', 5 Yd.
4-W Monighan Drag, 110', 4½ Yd.
1055 P&H Dragline, 100', 3 Yd.
54-B Bucyrus Erie Drag, 90', 2½ Yd.
1201 Lima Dragline, 85', 3 Yd.
3500 Manitowoc Drag, 80' 2½ Yd.
1001 Lima Drag, 80', 2½ Yd.
190-B Bucyrus Erie Elec. 8 Yd. Shovel
170-B Bucyrus Erie Elec. 6½ Yd. Shovel
1600 P&H Elec. 6 Yd. Shovel
2400 Lima 6 Yd. Diesel Shovel
120-B Bucyrus Erie Elec. 5 Yd. Shovel
1055 P&H 4½ Yd. Shovel
111-M Marion 4 Yd. Shovel
1201 Lima Standard 3½ Yd. Shovel
803 Lima 2½ Yd. Shovel
80-D Northwest 2½ Yd. Shovel
54-B Bucyrus Erie 2½ Yd. Shovel
38-B Bucyrus Erie 1½ Yd. Shovel
6 Northwest 1½ Yd. Shovel
22-B Bucyrus Erie ¾ Yd. Shovel
802 Lima Cranes
58-BH Joy Champion Rotary Air Drills
600 Reich Heavy Truck Mounted Rotary Air Drill
Failing Rotary Drill
Quarrymaster Drill—with 2-500 cu. ft. Compressors
Also, 42-T, 29-T and 27-T Well Drills
—EUCLID TRUCKS—Many to Choose From—

FRANK SWABB
EQUIPMENT CO., INC.
313 Hazleton National Bank Building
GLadstone 5-3658 **Hazleton, Pa.**



The Bowdil Company, Canton, Ohio, has developed a trimmer chain for the boring type of continuous mining machine. The chain can be assembled with a small hand tool and its pitch can be varied by changing coupling. The Bowdil throwaway bits are used in this chain.

Save on Your INDUSTRIAL TRACK

FOSTER QUALITY **FULLY GUARANTEED**

RELAYING RAILS

Handle more cars better—cost less to install and maintain. Foster stocks all Rail Sections 12# thru 175#, Switch Material and Track Accessories.

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FOR SALE

Osgood 906 Combination Stripper, 38 Ft. Boom, 32 Ft. Stick. 2½ Yd. Bucket; 80 Ft. Dragline Boom, 1¾ Yd. Bucket. Fairlanes. $17,500. Recently overhauled. Caterpillar D-8 Tractor with Angle Blade, $4,500.

CONTE EQUIPMENT CO., Monroeville, Pa.
Phone BRandywine 1-4380

FOR SALE

1,760' rope-and-button type hillside retarding conveyor in two sections, one 1,240', the other 520', capacity 300 tons per hour, completely equipped with reciprocal plate feeder, 3,520' of 1¼" wire rope (used less than 6 months), all necessary cable clamps (buttons), sprockets, bearings, shafts, pinions, pulleys, sheaves, etc., to make up complete conveyor. Conveyor is mounted on and supported by a structure of Oregon fir, in first-class condition, which can be dismantled in sections for transportation and can be reused. The complete conveyor, including wire rope, operating equipment and supporting structure, may be inspected over its entire length from a walk-way which extends full length of conveyor. Above equipment recently taken out of operation and all in excellent condition. Conveyor located at Lorado, West Virginia, and may be inspected at any time at your convenience. If you are interested in inspection or further information, please communicate with:

THE LORADO
COAL MINING COMPANY
33 North High Street
COLUMBUS 15, OHIO

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COAL MINING

August, 1956

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Joy Continuous Miner 3 JCM-2BE
Joy 8 BU Loader, fair price.
GE 10-Ton Loco. 42" ga. and Jeff 8-Ton Loco 42" ga.
Jeffrey & Goodman Shortwalls A.C. 440 V.
Jeffrey Shortwall 35 B & 35 BB permissable.
Whse. M-G set 100 KW 250 Volt DC, good.
300 KW Ridgeway & 150 KW, good and complete.
Drag Conveyors 35' long x 24" wide for Cl. Plt.
McCarthy Highwall Auger 36" available now.
Jeffrey Type Shuttle Cars and T-1 "Cat" truck.
Jeffrey 35 L with 9' bar on Jeff off track truck.
Will buy 2 14 BU Joy loaders to rebuild.
Tyler Vibrating Screws Dble. Deck 6'x16'

T. L. (Les) SIMPSON
Machinery Agent and Broker
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The Chicken or the Egg?

Like the old gag about "which came first, the chicken or the egg" is the question of whether J. T. FISH is the biggest outfit in the mining machinery business because they give the BEST equipment for the LEAST money—or whether they give the BEST equipment for the LEAST money because they are the biggest! What difference does it make—you WIN, either way!

Call on us for your requirements of Loaders, Cutters, Shuttle Cars, Substations, Copper Wire, or any other type of MINING EQUIPMENT. Or if you have surplus equipment of any type to SELL, whether one item or a complete coal mine, you can rely on us for a fair deal ALWAYS!

We Own What We Advertise

Buy from the largest stock of good mining equipment in America. Includes all types of Joy Cutters, Loaders, Shuttle Cars, Cat Trucks, Belt Conveyors, Chain Conveyors, etc.

JOY EQUIPMENT — Rebuilt

3—Joy 20-BU Loaders, latest type
3—Joy 14-BU, low pedestal, Loaders, 38-J Head Motors.
2—Joy 12-BU Loaders, 7E, excellent.
6—Joy 8-BU Loaders.
3—Joy 11-BU Loaders.
5—Goodman 660 Loaders on Cats, excellent.
6—Joy 8SC Shuttle Cars, lowest type.
2—Joy 32E9 Shuttle Cars.
2—Joy 32E10 Shuttle Cars.
6—Joy 32E15 Shuttle Cars.
1—Joy T-1 Standard Cat Truck.
1—Joy T-2-5 Cat Truck, AC
5—Joy T-2-5 Cat Trucks, 250 volt DC.
4—Joy 11-B Cutting Machines, like new.
1—Joy 7B Cutting Machine, excellent.
8—Goodman Machines on Cats, 31" high. All hydraulic.
2—Goodman 512 Cutting Machines with Bugdusters, like new.
1—Goodman 512 Cutting Machine, perfect.
2—Westinghouse type 907, 10 ton, 44" and 48" Ga.

LOCOMOTIVES

2—Jeffrey 20 ton, type MH-110, 42" and 44" Ga.
4—Jeffrey 13 ton, type MH-110, 36", 42" and 44" Ga.
3—Jeffrey 10 ton, type MH-78, 42" and 48" Ga.
12—Jeffrey 6 ton, type MH-88, 42", 44" and 48" Ga.
3—Jeffrey 4 ton, type MH-96, 42", 44" and 48" Ga.
1—G.E. 4 ton, type 825 Locomotive, 26" high.
10—G.E. 6 ton, types 801, 803, 821 Locomotives, 42", 44" and 48" Ga.
1—G.E. 8 ton, type 822 Locomotive, 44" Ga.
3—G.E. 10 ton, type 809 Locomotives, 42", 44" and 48" Ga.
1—G.E. 10 ton, 829 Locomotive, 36" Ga.
1—Goodman 4 ton, 8-30 Locomotive, 22" above rail.
8—Goodman type 33, 6 ton, 44" and 48" Ga.
2—Goodman 8 ton, type 32A, 44" and 48" Ga.
3—Westinghouse type 902, 4 ton, 42" and 48" Ga.
2—Westinghouse type 904, 6 ton, 44" and 48" Ga.
2—Westinghouse type 906, 44" and 48" Ga.
3—Jeffrey 29 UC Cutting Machines, cat mounted, perfect.

TIPPLE EQUIPMENT

1—Cedar Rapids portable super Screening Plant.
1—Railroad Car Unloading Conveyor, gas driven.
1—Allis Chalmers 5' x 14' Rippflo Vibrator.
1—4' x 10' Robbins Gyrex Vibrator.
1—4' x 14' Vibrator, three deck, low head.
Feeders, Drag Conveyors, and Loading Booms.

CUTTING MACHINES

3—Jeffrey 29UC Universal on cats.
4—Baby Goodman 212's, rebuilt.
3—Goodman 312's, 18" high.
2—Goodman 412's, 18" high.
2—Goodman 512's with Bugdusters, like new.
15—Goodman 12AA's and 112AA's.
10—Goodman 324 Slabbers
2—Goodman 724 Slabbers
30—Jeffrey 35L, like new, 17" high.
15—Jeffrey 35B's and 35BB's.
2—Jeffrey 29B's on track.
1—Jeffrey 29L, track mounted.
2—Jeffrey 29C's, track mounted.
1—Jeffrey 29U, Universal, track mounted.
2—Sullivan CR-10, 15" high.

LOADING MACHINES

17—Joy Loaders, all types.
2—Jeffrey 61 CLR's on rubber, 26"
3—Jeffrey L-500 Loaders.
2—Goodman 360 Loaders
3—Myers Whaley No. 3 Automat Loaders.
3—Clarkson Loaders, 26" above rail.

CONVEYORS

2—Joy 30" Belt Conveyors, 10 to 15 H.P.
2—Goodman 97-C's, 26"
3000' 30" Conveyor Belt.
8—Jeffrey 61 AM Room Conveyors, 300 ft.
10—Jeffrey 61 HG Face Conveyors.
5—Room Conveyors, type 400, 300 ft.
2—61EW Elevating Conveyors.
2—61 WH, 15" Room Conveyors, 300 ft.
4—Joy Ladel UN-17 Shakers.
10—Goodman G-12½ and G-15 Shakers.

CONVERTERS AND DIESEL PLANTS

3—100KW, G.E. TCC-6's, 275 volt Rotary Converters.
3—150KW, G.E. HCC-6's, 275 volt Rotary Converters.
1—200KW, G.E. HCC-6 Rotary Converter, 275 DC.
3—300KW, G.E. HCC-6 Rotary Converters, 275 DC.
1—200KW Westinghouse Rotary Converter, 275DC.
1—300KW Westinghouse Rotary Converter, 275DC.
1—500KW Westinghouse Rotary Converter, 275DC. (All the above with 6900/13000 and/or 2300/4000 primary transformers)
2—150KW MG Sets, G.E. and Westinghouse.
1—200KW MG Set, General Electric.
1—300KW MG Set, General Electric.
1—500KW MG Set, General Electric.
1—Cummins 125KW, 250 volt DC.
1—700 H.P. Shaft Hoist, complete.
Complete steam plant, will sell all or any part.
Boilers, like new, 1100 H.P. and 500 H.P.
Also transformers, Turbines, etc.
Complete Tipples with Cleaning Plants.

MISCELLANEOUS

10—Air Compressors, 1 H.P. to 50 H.P.
40 Mine Pumps, all types
Pipe, Plastic, Steel Transit, all sizes 1" to 6"
35 Mine Cars, drop bottom, 42" Ga.
150 Mine Cars, 18" high, end dump, 44" Ga.
300 Mine Cars, end dump, 20" high, 48" Ga.
15 Brown Fayro HK and HGD Car Spotters
1—12 ton Differential Slate Larry.
4 Overhead Bridge Cranes
1 Kanawha Hillside Dump
5 Low Vein Water Cars.
Incline Hoists, 25 to 50 H.P.
Machine tools for mine shops
400 tons Rails, all sizes.
10 tons Copper Trolley and Feeder
300 Transformers from 1 to 2,000 KVA, 110 to 13,000 Primary volts.
400 Electric Motors, 3 to 200 H.P.
Suspension Bridge, 300' long for river crossings.
1 International TD-24 Angledozer.
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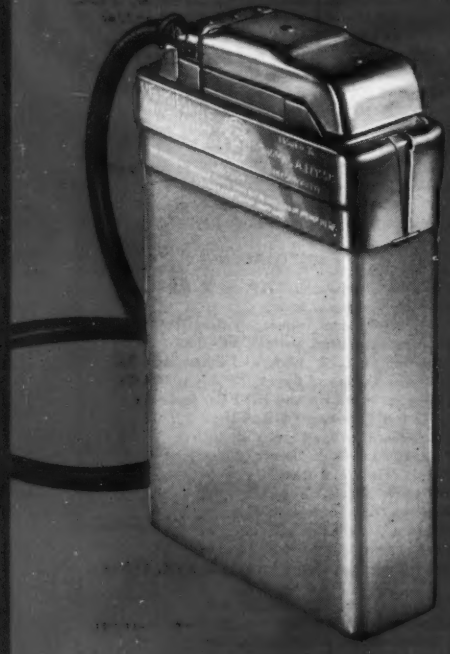

BURN-OUT doesn't mean BLACKOUT

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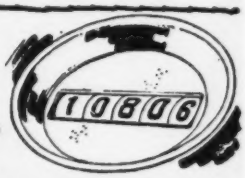
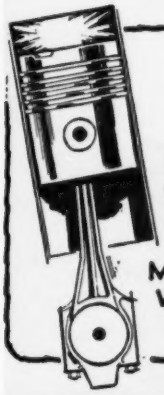


AND THEIR LIFE IS ACCURATELY MEASURED. EVERY **CATERPILLAR** DIESEL ENGINE IS EQUIPPED WITH AN HOUR METER ... YOU CAN CLOCK THE EXTRA HOURS OF WORK WHEN YOU REPLACE ORIGINAL PARTS WITH NEW **CAT** PARTS.



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IT'S HOT IN THE COMBUSTION ZONE OF YOUR DIESEL ENGINE ... OFTEN AS MUCH AS 3600° F! PISTONS, RINGS, PINS AND CYLINDER LINERS MUST BE SCIENTIFICALLY MADE TO WITHSTAND SUCH TEMPERATURES FOR ECONOMICAL LONG LIFE.

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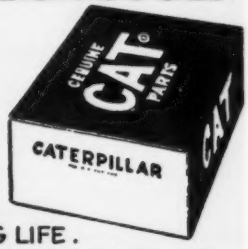

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Item 1055-P385 — Caterpillar D8 Tractor, mounted with LeTorneau Straight Blade and Rear Control Unit. Machine is in operating condition, with fair running gear.
$3,000.00
f.o.b. Pgh., Pa.

Item 356-P435—Caterpillar Model D7 Tractor with double drum cable control unit and new Caterpillar Model 7S straight blade with heavy duty radiator guard, which eliminates overhead structure. Diesel reconditioned with new pistons, bearings, injectors pumps and reconditioned heads. Radiator and oil cooler reconditioned. Gasoline starting engine repaired. Operating clutches checked and adjusted. New Bellows seals installed in final drives. Two bottom rollers and one new Idler installed. Pins and bushings turned in track, good used track shoes installed with new bolts, nuts and lockwashers. Sprockets are good.
$9,000.00
f.o.b. Pgh., Pa.

Item 655-P345 — Caterpillar D7 Tractor, mounted with Rear Double Drum Cable Control and LeTorneau Angle Blade. This machine has good tracks, bottom rollers, sprockets and idlers; new master clutch; machine in good operating condition. **$3,500.00**
f.o.b. Pgh., Pa.

Item 455-B146 — Caterpillar D6 Tractor equipped with La-Plante-Choate Angling Bulldozer. Rebuilt engine including new crankshaft and bearing; repaired left final drive, fly-wheel clutch, clutch linkage, track roller frame on right side. New hydraulic hoses, end bits and C-frame; tracks were pinned and bushed recently, machine cleaned and painted. This tractor has good appearance and is in good mechanical condition.
$5,280.00
f.o.b. Bradford, Pa.

Item 656-P464—International TD9 Tractor m/w Bucyrus-Erie Hydraulic Hylift. Installed new radiator new heads, new brakes, 1 cu. yd. bucket; machine is serviced. **$4,800.00**
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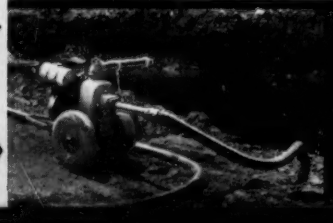

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